

REMARKS

This paper is responsive to any paper(s) indicated above, and is responsive in any other manner indicated below.

PENDING CLAIMS

Claims 10-22 were pending, under consideration and subjected to examination in the Office Action. Appropriate claims have been amended, canceled and/or added (without prejudice or disclaimer) in order to adjust a clarity and/or focus of Applicant's claimed invention. That is, such changes are unrelated to any prior art or scope adjustment and are simply refocused claims in which Applicant is present interested. At entry of this paper, Claims 10-26 will be pending for further consideration and examination in the application.

REJECTION UNDER 35 USC '103

The 35 USC '103 rejection of claims 10-22 as being anticipated by Moriya et al. (U.S. Patent 5,867,475) in view of Whaley (U.S. Patent 6,052,817) is respectfully traversed. All descriptions of Applicant's disclosed and claimed invention, and all descriptions and rebuttal arguments regarding the applied prior art, as previously submitted by Applicant in any form, are repeated and incorporated hereat by reference. Further, all Office Action statements regarding the prior art rejections are respectfully traversed. As additional arguments, Applicant respectfully submits the following.

Applicant's disclosed and claimed invention is directed to the objective of avoiding recording medium deterioration caused by repeatedly writing the same data on the same position of the recording medium. That is, in practice, typically the same data is often rewritten onto the same position of a recording medium. For example, if a file is slightly modified many

different times over time, and repeatedly rewritten back onto the disk. Applicant's found that when the same data is rewritten many times into the physically same place (e.g., sector) of an optical disk medium, the medium may degrade in quality in that the repeatedly rewritten data may become somewhat permanently etched. Then when new data is rewritten onto that same place, the former data tends to persist at that same place as noise.

Applicant's disclosed and claimed invention avoids the above degrading persistence problem, by randomly changing subject data each time it is to be rewritten onto the recording medium. Applicant does the same by using random number generators, to effectively change the subject data differently each time for rewriting. In terms of claim language, independent claim 10, for example, recites "wherein the seed data is data which is produced by using a different value for every time of rewriting data."

Turning now to rebuttal of the applied reference, Moriya et al. fails to disclose or suggest Applicant's invention, in that, at minimum, Moriya et al. does not use differing seed data for each rewrite. More particularly, Moriya et al. utilizes some type of standardized seed data, i.e., correlated to something. For example, the seed data may be correlated to a track number. Because the seed data is so correlated, every rewriting of a subject data onto a same place, will use the same standardized (i.e., correlated) seed data, and thus the same data will be written onto the same place. Such would result in the very problem and degradation that Applicant is trying to avoid. In short, Moriya et al. does not disclose or suggest any type of arrangement meeting Applicant's feature/limitations of: "wherein the seed data is data which is produced by using a different value for every time of rewriting data."

The Examiner has apparently admitted such deficiency of Moriya et al., and has now cited the secondary Whaley reference. However, it is respectfully submitted by Applicant that Whaley DOES NOT cure Moriya et al.'s deficiency, because Whaley operates substantially

similarly to Moriya et al. More particularly, Whaley's randomizer unit 18 **does not use a truly random seed value**, and instead, uses an "initialization value" which is **based upon an address of a data storage location which is being accessed** (see abstract; column 6, lines 32-38). Whaley's column 6, lines 40-43, describes an explicit example where "the initialization value comprises the 4 least significant bits (LSBs) of the sector number of the data sector being accessed, the LSB of the cylinder number of the data sector being accessed, and 2 bits of the appropriate head number." Thus, it can be seen that Whaley (like Moriya et al.) **always uses the same initialization (or "seed") value at the same memory location**.

Assume a situation where word processing file is opened and left unattended by a user for hours, but a "5-minute auto-save" feature is enabled and active. The word processing file will not change, but will be auto saved every 5 minutes. Because it has not changed, the same data will most likely be rewritten over the same storage medium location repeatedly, i.e., every 5 minutes. Because Moriya et al.'s and Whaley's arrangements use "seed" values based on the address where the data is being stored, the same "seed" value will be used again-and-again when storing the same data to the same memory location. Thus, Moriya et al.'s and Whaley's arrangements are plagued by the very problem sought to be solved by Applicant's present invention. That is, the same data (using the same "address seed" value) will be repeatedly rewritten to the same data location, resulting in etching degradation of the recording medium over time and persistently-etched data causing ghost noise if the memory location is ever subsequently used to write differing data.

In contrast, Applicant's disclosed and claimed invention **uses a different value of seed data for every time of rewriting data**. That is, with the above "5-minute auto-save" example, Applicant's invention will utilize a differing seed value every time the same data is rewritten to

the same data location. Thus, differing resultant data is rewritten each time, and Applicant's invention thus avoids etching degradation and persistent ghost noise.

In addition to the foregoing, the following additional remarks from Applicant's foreign representative are also submitted in support of traversal of the rejection and patentability of Applicant's claims.

In Applicant's invention, in the optical disk apparatus, an arbitrary seed data for randomizing is added to an original data to be recorded on a disk, where the randomizing data is obtained by a randomizing operation. By operation using above-described randomizing data, descrambled data is obtained. Applicant's specific arrangement is advantageous in that, there is no need to know the seed data at the time of descrambling.

In addition, at the time of writing a same original data on a same area repeatedly, the 1st and 2nd time writing seed data for scrambling will be quite different. As a result, it is possible to avoid the medium deterioration by the changing of the writing data. That is, writing of the same data on the same area repeatedly may otherwise cause medium deterioration.

In the cited prior art, there is no teaching about above-described feature of Applicant's invention. More particularly, a comparison of Applicant's invention with inventions specified in prior arts is as follows.

In Office Action Item 5, the Examiner has alleged that Moriya, et al. (US patent 5,867,475; hereinafter Moriya) teaches a data-randomizing method for an optical disk apparatus adapted to record data on recording medium by light, and read data on the recording medium by utilizing a difference in reflectance, comprising: adding seed data for randomizing, to subject data to be recorded on the recording medium (column 9, lines 45-63 and column 10, lines 13-22). However, in Moriya, there is only the description that "the M-sequence generator is set to a predetermined operation state." That is, there is no description

of "adding seed data for randomizing, to subject data to be recorded on the recording medium."

Further in Item 5, the Examiner has alleged that Moriya teaches also "determining at least one bit randomized data by operating at least one bit data added seed data to the data and multiple bit randomized data, which was made from at least one bit added seed data and multiple randomized bit data (column 10, lines 13-22, and lines 33-44). However, in Moriya, as clearly shown in the drawing sketch labeled Fig. 1 attached herewith, there is only such description of an arrangement where an "Exclusive-or operator performs an exclusive-or operation randomized signal from the initial value and data". The randomized signal in Moriya means a simple randomized sequence signal which is different from randomized data, and which does not contain user data which should be recorded on the recording medium.

On the other hand, in Applicant's invention as shown in Fig. 2 attached herewith, one bit randomizing data is determined by operating data added seed data to the original data and multiple bit randomized data.

Also in Item 5, the Examiner has alleged that Whaley (US patent 6,052,817) teaches a data randomizing method wherein a different value of seed data is used as the seed data for every time of writing data (column 2, line 53 to column 3, line 6). However, Whaley teaches only that when data written in the first segment is rewritten on the second segment of the physically different area, different seed data is used. That is, Whaley teaches that by randomizing based on written area, at the reading step, it makes possible to detect the wrong reading from wrong area data.

On the other hand, Applicant's invention makes it possible to avoid the deterioration of recording medium by changing a seed data at every writing of the same original data on the same area on the recording medium.

In the Office Action item 6, the Examiner has alleged that Moriya further teaches determining one-bit-de-randomized data by operation using multiple bit randomized data (column 16, lines 37-50 and column 12, lines 16-25). In traversal, the description in column 12, lines 16-25, is not related to descrambling circuit, but is related to scrambling circuit. The description about descrambling circuit of Moriya is given in column 17, lines 13-46, and as shown in Fig. 3 attached herewith, one-bit-de-scrambled data is obtained by operation randomized data D0-D7 read out from the disk recording medium and randomizing signal S0-S7 generated based on the initial value. The one-bit-de-scrambled data is not determined by operation using bit randomized data.

On the other hand, in Applicant's invention, as shown in Fig. 4 attached herewith, one-bit-de-scrambled data is determined by operating using multiple bit randomized data and there is no need to know seed data at Applicant's descrambling operation.

In Item 4, the Examiner has alleged that by combining Moriya and Whaley, Applicant's invention is easily obtained. Traversal is appropriate because a scrambling circuit and descrambling circuit disclosed in the prior arts of Moriya and Whaley are shown in Figs. 1 and 3 attached herewith, while significantly differing scrambling and descrambling circuits of Applicant's invention are shown in Figs. 2 and 4 attached herewith. By comparing these figures, the difference between this invention and the prior arts cited may be clearly understood. As a result, it is clear that this invention is not obtained by the combination of Moriya and Whaley.

One advantage of Applicant's disclosed and claimed arrangement is that there is no need to know seed data at a time of descrambling, by the deployment of the circuits as shown in reference Fig. 2 and 4. By this advantage, it is possible to use seed data not related to the address of the writing area at writing, and at writing repeatedly the same original data on the

same area, it is possible to scramble by using quite different seed data at first and second time writing and to thus change the writing data. By changing the writing data by the above-described scrambling makes possible to avoid the recording medium deterioration.

By Applicant's invention, it is possible to descrambling by using only the read-out data, and there is no need to know the seed data at descrambling. In addition, there is no need to record seed data in any other area.

As a result of all of the foregoing, it is respectfully submitted that the applied art (taken alone and in the Office Action combinations) would not support a '103 obviousness-type rejection of Applicant's claims. Accordingly, reconsideration and withdrawal of such '103 rejection, and express written allowance of all of the '103 rejected claims, are respectfully requested. Further, at this point, it is respectfully submitted as a reminder that, if new art is now cited against any of Applicant's unamended claims, then it would not be proper to make a next action final.

EXTENSIVE PROSECUTION NOTED

Applicant and the undersigned respectfully note the extensive prosecution which has been conducted to date with the present application, and thus Applicant and the undersigned would gratefully appreciate any considerations or guidance from the Examiner to help move the present application quickly to allowance.

EXAMINER INVITED TO TELEPHONE

The Examiner is herein invited to telephone the undersigned attorneys at the local Washington, D.C. area telephone number of 703/312-6600 for discussing any Examiner's

Amendments or other suggested actions for accelerating prosecution and moving the present application to allowance.

RESERVATION OF RIGHTS

It is respectfully submitted that any and all claim amendments and/or cancellations submitted within this paper and throughout prosecution of the present application are without prejudice or disclaimer. That is, any above statements, or any present amendment or cancellation of claims (all made without prejudice or disclaimer), should not be taken as an indication or admission that any objection/rejection was valid, or as a disclaimer of any scope or subject matter. Applicant respectfully reserves all rights to file subsequent related application(s) (including reissue applications) directed to any/all previously claimed limitations/features which have been subsequently amended or cancelled, or to any/all limitations/features not yet claimed, i.e., Applicant continues (indefinitely) to maintain no intention or desire to dedicate or surrender any limitations/features of subject matter of the present application to the public.

CONCLUSION

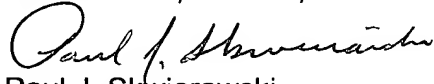
In view of the foregoing amendments and remarks, Applicant respectfully submits that the claims listed above as presently being under consideration in the application are now in condition for allowance. Accordingly, early allowance of such claims is respectfully requested.

To the extent necessary, Applicant petitions for an extension of time under 37 CFR '1.136.

Authorization is herein given to charge any shortage in the fees, including extension of time fees and excess claim fees, to Deposit Account No. 01-2135 (Case No. 520.39904X00) and please credit any excess fees to such deposit account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

A handwritten signature in cursive script, appearing to read "Paul J. Skwierawski".

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ATTACHMENTS:

Reference Figs. 1-4 (2 sheets)